



# INDIANA DEPARTMENT OF TRANSPORTATION

*Driving Indiana's Economic Growth*

## Design Memorandum No. 12-12 Technical Advisory

June 6, 2012

**TO:** All Design, Operations, and District Personnel, and Consultants

**FROM:** /s/ Anthony L. Uremovich  
Anthony L. Uremovich  
Manager, Office of Bridge Standards and Policy  
Division of Bridges

**SUBJECT:** Reinforced-Concrete Bridge Approach

**SUPERSEDES:** *Indiana Design Manual Section 17-5.09*

**EFFECTIVE:** September 12, 2012, Letting

### A. Miscellaneous Requirements

1. Dimensions. The RCBA length, width, skew, thickness, reinforcement, and bill of materials should be determined and shown on the plans. Such information is not shown on the INDOT Standard Drawings. The width should equal the bridge clear-roadway width. The thickness should be determined as shown on *Indiana Design Manual* Figure 17-5G. Guidance regarding layout and reinforcing-bars placement is shown on *Manual* Figure 17-5G(1) for a square structure, or *Manual* Figure 17-5G(2) for a skewed structure. The length and width should be shown on the General Plan sheet. All Figures are attached herewith.
2. Anchoring. The RCBA should be anchored to the end of the superstructure where integral end bent construction is used. The RCBA should be anchored to the adjacent mudwall where a bridge deck expansion joint is used at the end of the superstructure. See *Indiana Design Manual* Chapter 409 for connection details.

3. Polyethylene Fabric. Two layers of polyethylene fabric, each of minimum thickness 0.02 in., should be placed between the RCBA and the subgrade where the RCBA is anchored to the superstructure.
4. Terminal Joint. If the approach roadway is PCCP, a terminal joint as shown on INDOT *Standard Drawing* 503-BATJ-01 should be provided at the roadway end of the RCBA. No such joint is required if the approach-roadway pavement is HMA.
5. Extension for Bridge-Railing Transition. An extension should be provided under each bridge-railing transition as shown on INDOT *Standard Drawings* series 609-TBAE. The extension should be considered part of the RCBA, and not part of the transition.

## **B. Summary of Bridge Quantities**

Quantities for the following pay items should be included on the Bridge Summary sheet, in the Summary of Bridge Quantities table, separate from other bridge quantities.

1. RCBA of the required thickness, including extensions for bridge-railing transitions, per square yard.
2. Epoxy-coated reinforcing bars in the RCBA and extensions, per pound.
3. Dense-graded subbase placed under the RCBA and extensions, per cubic yard.

## **C. Standard Drawings and Recurring Special Provision**

INDOT *Standard Drawings* series 609-RCBA-01 through -07, effective Sept. 8, 2011, letting, has been deleted. It has been replaced with new *Drawings* 503-BATJ-01 and 609-RCBA-01. *Drawings* series 706-TASE-01 through -04, effective Sept. 8, 2011, letting, has been deleted. It has been replaced with new *Drawings* series 609-TBAE-01 through -04. The 503-series *Drawing* appears at <http://www.in.gov/dot/div/contracts/standards/drawings/sep12/e/sep4to5.htm>. The 609-series *Drawings* appear at <http://www.in.gov/dot/div/contracts/standards/drawings/sep12/e/sep600.htm>.

Recurring Special Provisions 609-B-199 and 706-R-600, attached herewith, should be called for beginning with the September 12, 2012, letting, if the project includes INDOT *Standard Specifications* Section 609 pay items.

alu  
Attachments

[P:\Structural Services\Design Memos\Signed\2012\1212-ta.doc]

ARCHIVED

## 609-B-199 REINFORCED CONCRETE BRIDGE APPROACH

(Adopted 04-19-12)

The Standard Specifications are revised as follows:

SECTION 609, AFTER LINE 2, DELETE AND INSERT AS FOLLOWS:

**609.01 Description**

This work shall consist of constructing reinforced concrete bridge approaches, RCBA, ~~on a prepared subgrade and subbase~~ and extensions required for bridge railing transitions in accordance with 105.03.

SECTION 609, BEGIN LINE 22, INSERT AS FOLLOWS:

**609.03 General Requirements**

Subgrade shall be prepared in accordance with 207. Subbase shall be prepared in accordance with 302.

*The RCBA extension shall be placed only where a concrete bridge-railing transition shall be located on the RCBA. If the transition shall be placed on the bridge, the RCBA shall be placed as shown on the plans.*

SECTION 609, BEGIN LINE 123, INSERT AS FOLLOWS:

**609.13 Method of Measurement**

Reinforced concrete bridge approaches, including extensions required for bridge railing transitions, will be measured by the square yard (~~square meter~~). Dense graded subbase will be measured in accordance with 302.08. Reinforcing bars will be measured in accordance with 703.07.

Subgrade preparation will not be measured for payment. Finishing and curing of the RCBA will not be measured for payment. Construction joints or type I-A joints will not be measured.

**609.14 Basis of Payment**

Reinforced concrete bridge approaches, including extensions required for bridge railing transitions, will be paid for at the contract unit price per square yard (~~square meter~~). Dense graded subbase will be paid for in accordance with 302.09. Reinforcing bars will be paid for in accordance with 703.08.

## 706-R-600 REINFORCED CONCRETE MOMENT SLAB

(Adopted 03-15-12)

The Standard Specifications are revised as follows:

SECTION 706, BEGIN LINE 75, DELETE AND INSERT AS FOLLOWS:

**706.04 Concrete Railing With Reinforced Concrete Moment Slab**

The railing portion shall be constructed in accordance with 602.03 except it shall be cast in place. Type D-1 contraction joints in the moment slab shall match the locations of the joints in the abutting PCC pavement. If the abutting pavement is HMA, the D-1 contraction joints shall be spaced at 18 ft (~~5.5 m~~). *The locations of the transverse joints in the moment slab and the railing shall be the same.*

Moment slabs shall be formed with either steel or wood forms in accordance with 508.04(c)1 or 508.04(c)2. Vibration of the concrete shall be in accordance with 702.20(c). *The thickness of the moment slab shall match that of the adjoining PCCP, but it shall not be less than 12 in..*

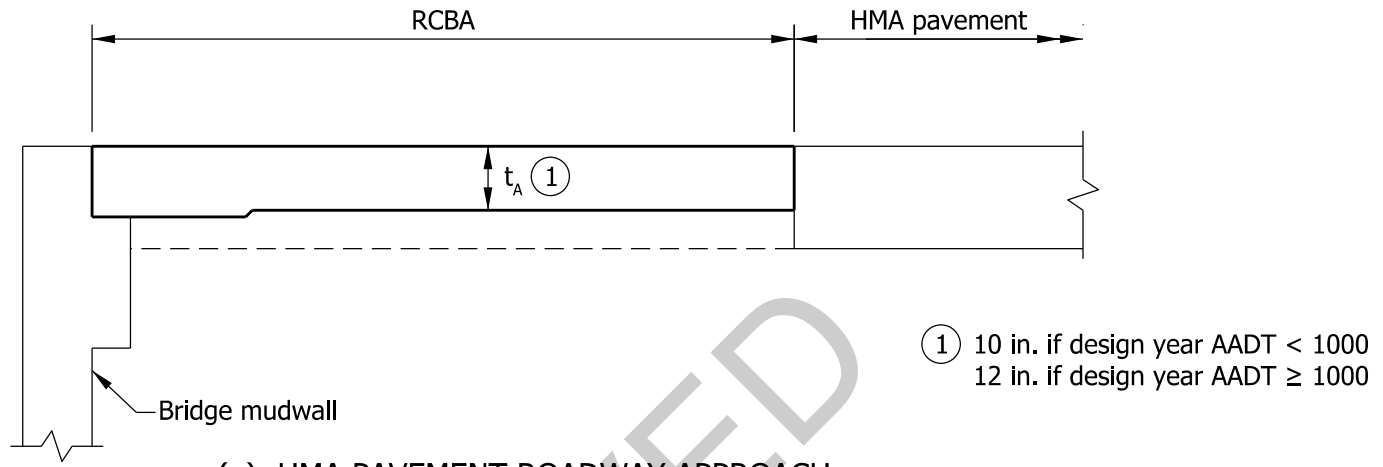
The underdrains for MSE walls layer shall be compacted in accordance with 302.06(b). *The MSE-wall coping may be precast or cast in place.*

Type D-1 contraction joints and dowel bar assemblies shall be in accordance with 503.

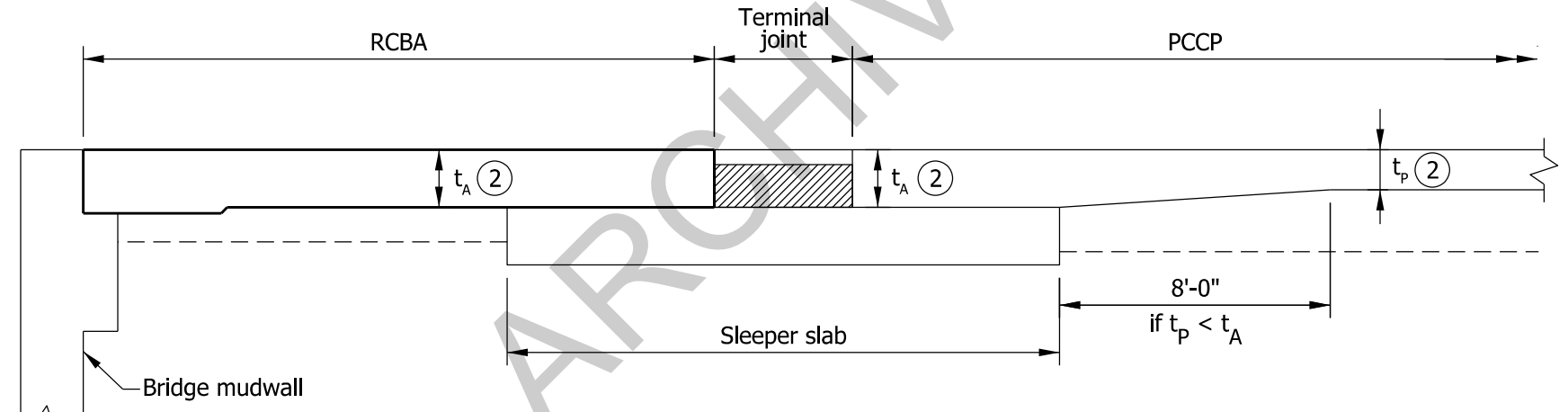
Finishing and curing the moment slab shall be in accordance with 504. Finishing and curing the railing shall be in accordance with 702.

Job control testing for acceptance shall be in accordance with 502.05.

---



(a) HMA PAVEMENT ROADWAY APPROACH

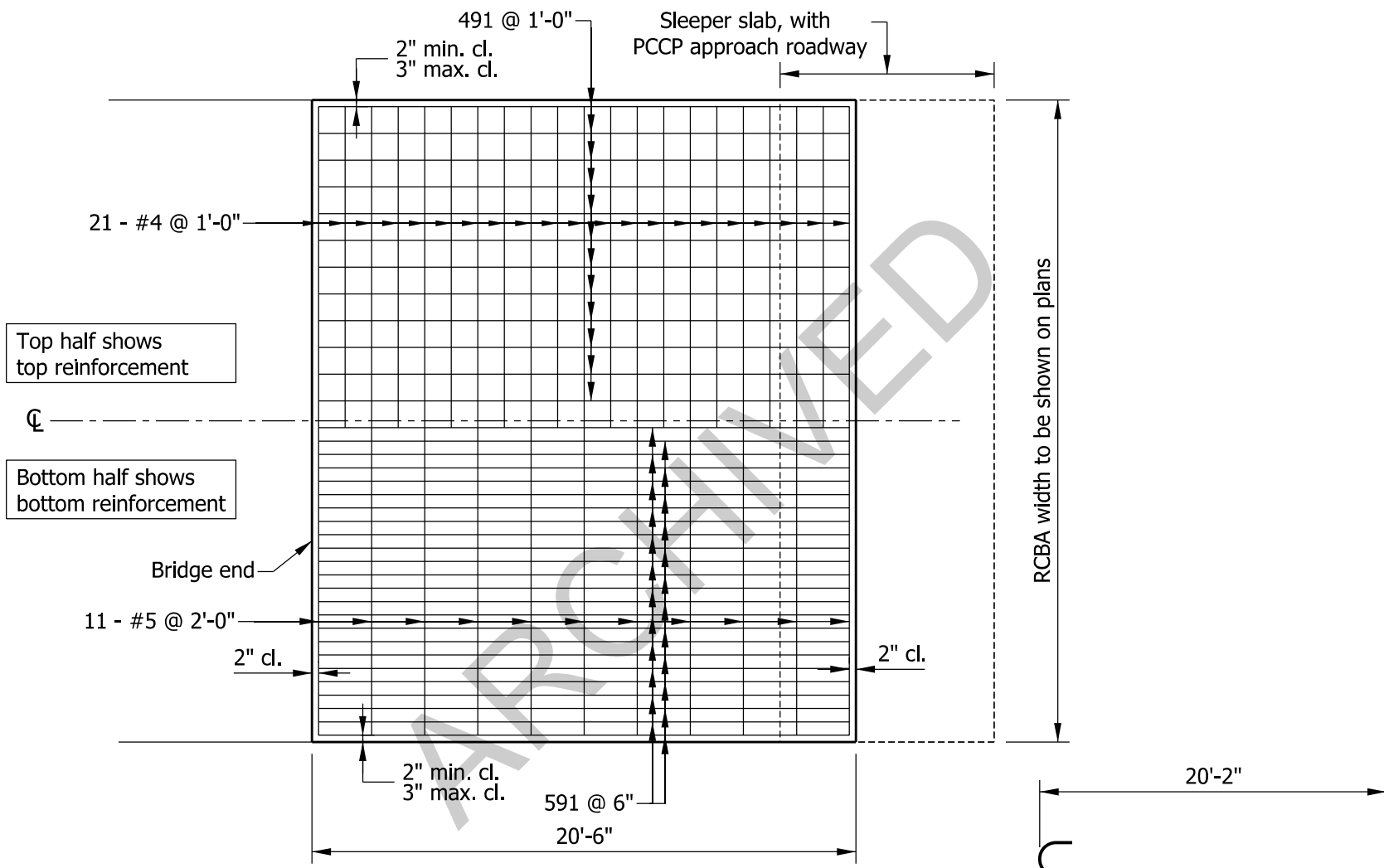


(b) PCCP ROADWAY APPROACH

(2) If  $t_p \geq 12$  in.,  $t_A = t_p$ .  
If  $t_p < 12$  in.,  $t_A = 12$  in.

### RCBA THICKNESS DETERMINATION

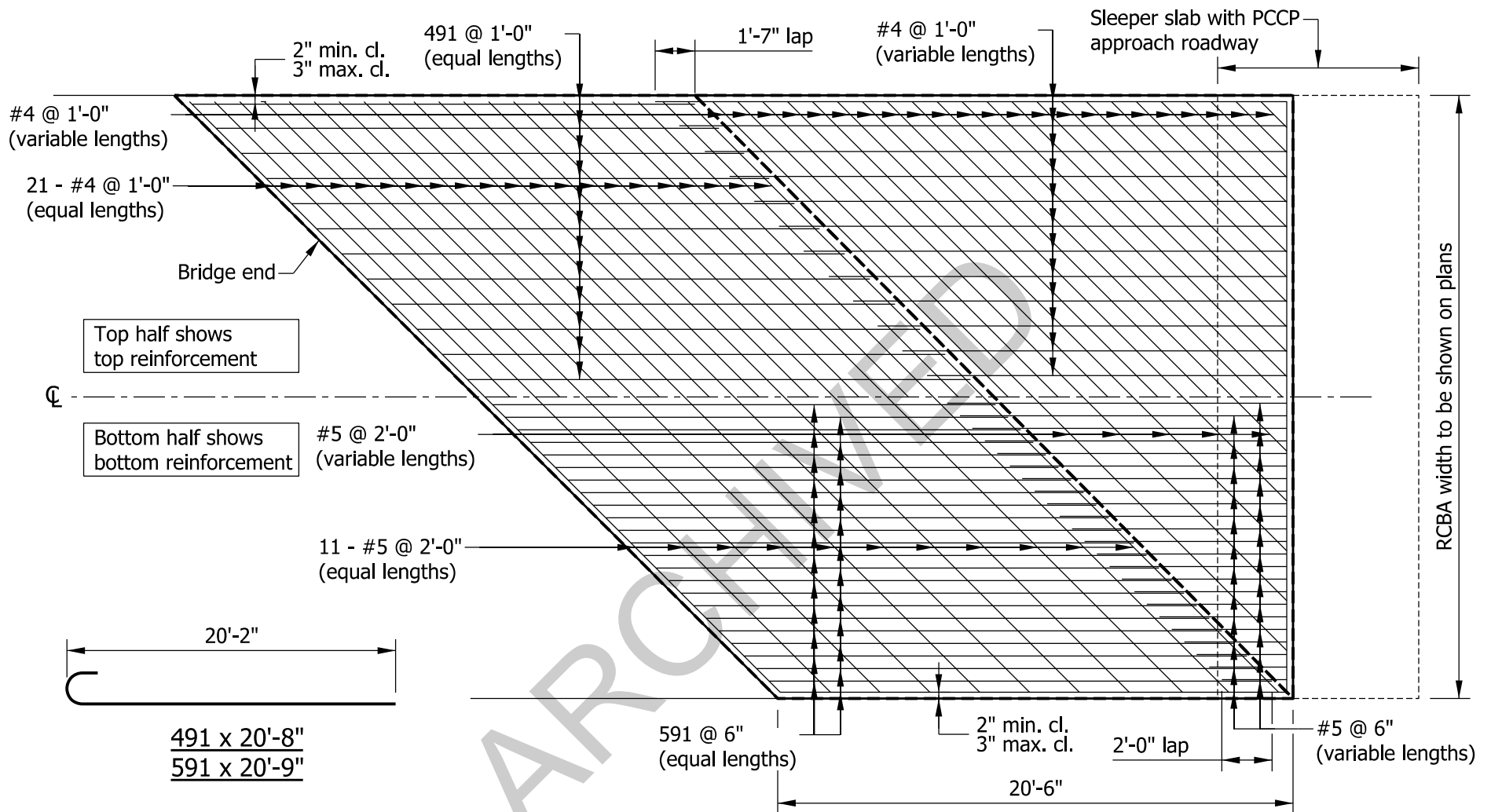
Figure 17-5G



RCBA FOR SQUARE STRUCTURE

491 x 20'-8"  
591 x 20'-9"

Figure 17-5G(1)



**NOTE:**

1. Variable-length #4 and #5 bars should be detailed by means of cutting diagrams.

**RCBA FOR SKEWED STRUCTURE**

Figure 17-5G(2)